

## Rope Burn: A Case Report

Sharmila Gurung\*

\*Lecturer, Department of Forensic Medicine & Toxicology, Devdaha Medical College, Rupandehi, Nepal.  
Email: jwelsharmila@hotmail.com

**ABSTRACT:** hanging has been used as one way of committing suicides, and ligature marks around the neck could indicate the manner of death in forensic investigation. Rope burns, as a result of abrasions of the rope material and the skin are seldom present. This case presents an example of rope burns seen around the ligature mark in a male deceased found dead hanging in his house.

**Keywords:** abrasion, hanging; periligature injuries, rope burn.

### Introduction

Hanging is a common method of suicide and ligature marks are the significant parts in determining the cause and manner of a death. The presence of rope burn in the ligature mark further helps in supporting the determination of the manner of death. Rope burns are seldom present and are caused by heat when the rope slides over the skin causing friction and first degree burn. Hence, it indicates the antemortem nature of the wound. A case of hanging with rope burn is reported here.

### Case report

A 48 year old male was found dead, hanging in his house in April 2011. He had committed suicide by hanging in his bedroom at 8 pm in the evening by a nylon rope. It was an atypical hanging with complete suspension and the suspension point was wooden beam across the ceiling, 10 ft above the ground. A study table by the side of the bed and undisturbed furniture in room suggested the use of table to access the suspension point. The family members immediately cut the rope with a kitchen knife and released him as soon as he was found but he had already succumbed to death. He had a history of alcohol abuse and had a heated argument with his family, regarding the habit a day prior to his death.

### Autopsy findings

On external examination, a well-built body of male of average weight and height was present. Rigor mortis and post mortem hypostasis were present and fixed. A single, oblique, slightly grooved, dry, incomplete, reddish brown ligature mark was seen in the upper mid part of the neck. Five to six blisters, less than 0.5 mm in diameter containing clear fluid, were present on the ventral, medial and along the upper part of the mark. On internal examination, the larynx and respiratory tract were congested. Hyoid bone and thyroid cartilage were

not fractured. The internal organs were congested. There were neither other injuries nor any signs of struggle or decomposition in the body.

### Review of Literature and Discussion

Hanging is one of the commonest modes of suicide. It is a form of ligature strangulation in which the force applied to the neck is derived from the gravitational drag of the weight whole or part of a body. Hanging is almost always suicidal or accidental with the former being the most common as questions may sometimes arise regarding its manner. Saliva dribble mark is a classical feature of antemortem hanging, but it may not always present [1].

The ligature mark is of vital importance where its thorough examination alone can have significant role in determining the manner of death. Ligature mark is a patterned abrasion over the neck which depends on the duration of the body being suspended. The mark is initially pale or yellow parchment like area with a rim that is congested or with slight petechial hemorrhages. With time, it furrows, dries, turns into brownish colour and becomes parchmented. The narrower the ligature, the harder its material is and the longer the suspension time, the more it becomes prominent [2]. It can be discontinuous or even absent if the body is suspended for a short time by a broad, soft and yielding material.

Materials such as clothes, necklace, beard, hairs, when trapped in between ligature and the neck can often lead to variation in the pattern. Tight necklaces and shirt collar may as well simulate a ligature mark [3]. Findings such as rope burns and nail marks can sometimes be present around the ligature mark which are termed as 'periligature injuries' [4].

Rope burn is one of the periligature injuries produced when a rope slides against the skin,

generating friction which in result produces considerable heat causing burn. They are usually produced when the rough ligature material such as rope is used. The affected part becomes erythematous with capillary dilatation. Tissue fluid is expressed into the upper layers of skin through a split at epidermis or at the dermoepidermal junction to form a blister, which is covered by white avascular epidermis bordered by a red, hyperemic skin and are usually appreciated along the margin of the mark. The epidermal layer of skin underneath the mark are injured by the ligating material so that it lacks blister or even when present are likely to be crushed without being evident. Such blisters are produced only when

tissues are alive hence, this reaction is not possible when the person is dead. Therefore, it is suggestive of life and indicates the ante mortem nature of hanging.

The possibility of producing a rope burn by hastily cutting the ligating material or forcefully bringing down the body of the victim to relieve him or her can be ruled out if the victim is dead. The mere presence of rope burn indicates the antemortem nature of hanging and therefore suggests the suicidal manner of the death when met with other similar indications. The rate of incidence is 1 in 82 [5].

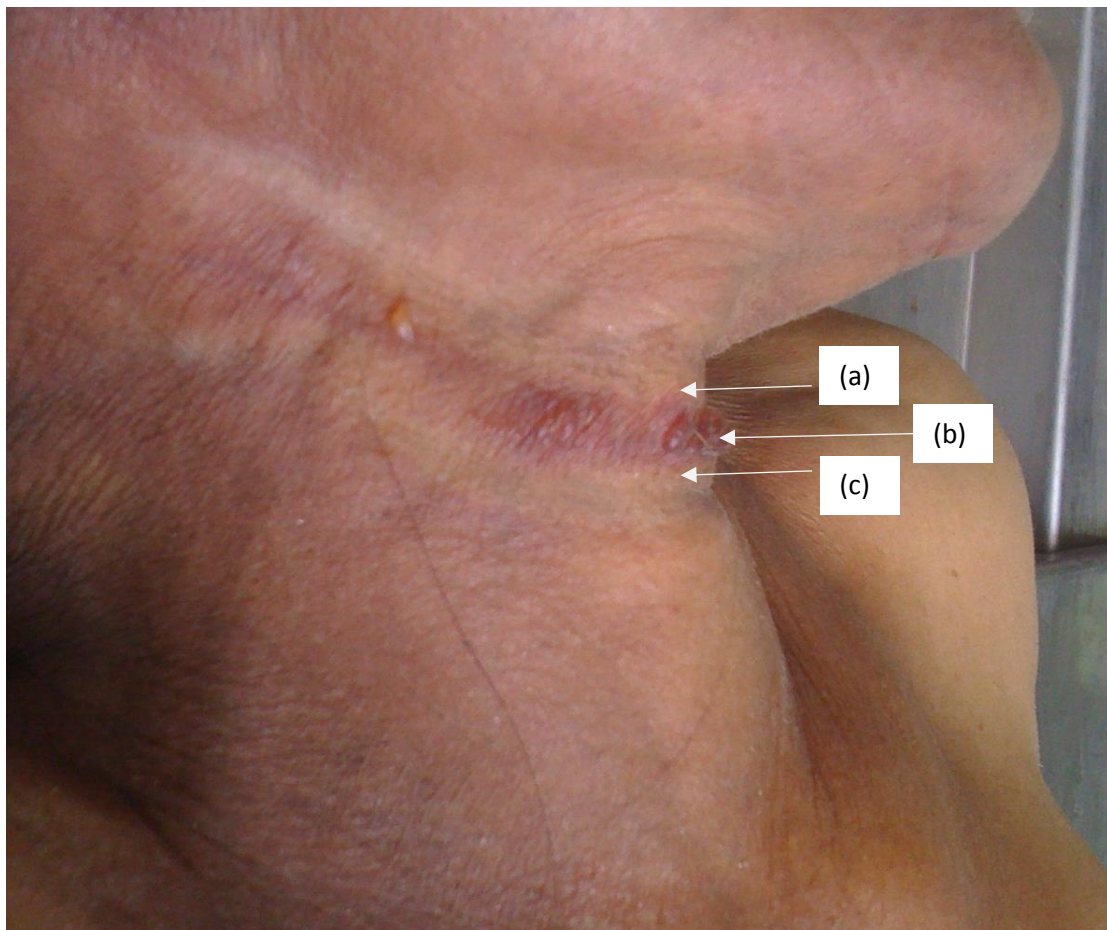


Figure 1: Figure showing (a) depression by skin fold and (b) the presence of rope burn over the (c) ligature mark

### Conclusion

The present case exhibited the rope burn in the ligature marks that could help in providing useful lead to the manner of death. Its presence indicates the activity during life hence, antemortem nature and suicidal manner of death.

### References

1. Reddy KSN. (2009). The essentials of forensic medicine and toxicology. twentyeighth ed. Hyderabad: K. Suguna Devi; p. 296.
2. Suárez-Peñaranda JM, Álvarez T, Miguéns X, Rodríguez-Calvo MS, De Abajo BL, Cortesão M. (2008). Characterization of lesions in hanging deaths. *J Forensic Sci*, 53(3):720–3.

3. Sharma BR, Harish D, Singh VP, Singh P. (2005). Ligature mark on neck: how informative? *J Indian Acad Forensic Med*, 27(1):10–5.
4. Tumram NK, Ambade VN, Bardale RV, Dixit PG. (2014). Injuries over neck in hanging deaths and its relation with ligature material : Is it vital ? *J Forensic Leg Med*, 22:80–3.
5. Kumar Mohanty M, Rastogi P, Kumar GP, Kumar V, Manipady S. (2003). Periligature injuries in hanging. *J Clin Forensic Med*, 10(4):255–8.